



[4910-13-P]

## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2018-0993; Product Identifier 2018-NE-18-AD]**

**RIN 2120-AA64**

### **Airworthiness Directives; Rolls-Royce Deutschland Ltd & Co KG TAY 650-15 and TAY 651-54 Turbofan Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** We propose to adopt a new airworthiness directive (AD) for all Rolls-Royce Deutschland Ltd & Co KG (RRD) TAY 650-15 and TAY 651-54 turbofan engines with low-pressure compressor (LPC) fan blade module M01300AA or M01300AB, installed. This proposed AD was prompted by reports of LPC fan blade retention lug fractures on engines with a high number of dry-film lubrication (DFL) treatments. This proposed AD would require determining the number of DFL treatments applied on each LPC fan blade, and removing from service and replacing the affected LPC fan blades if the DFL treatment limit is exceeded. We are proposing this AD to address the unsafe condition on these products.

**DATES:** We must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.

- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12 140, 1200 New Jersey Avenue SE., Washington, DC, 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For RRD service information identified in this NPRM, contact Rolls-Royce Deutschland Ltd & Co KG, Eschenweg 11, Dahlewitz, 15827 Blankenfelde-Mahlow, Germany; phone; +49 (0) 33-7086-1883; fax: +49 (0) 33-086-3276. You may view this service information at the FAA, Engine & Propeller Standards Branch, 1200 District Avenue, Burlington, MA, 01803. For information on the availability of this material at the FAA, call 781-238-7759.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0993; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, the mandatory continuing airworthiness information (MCAI), the regulatory evaluation, any comments received, and other information. The street address for Docket Operations (phone: 800-647-5527) is listed above. Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** Wego Wang, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA, 01803; phone: 781-238-7134; fax: 781-238-7199; email: [wego.wang@faa.gov](mailto:wego.wang@faa.gov).

### **SUPPLEMENTARY INFORMATION:**

#### **Comments Invited**

We invite you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section.

Include “Docket No. FAA-2018-0993; Product Identifier 2018-NE-18-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this NPRM. We will consider all comments received by the closing date and may amend this NPRM because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this NPRM.

## **Discussion**

The European Union Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Community, has issued EASA AD 2018-0079, dated April 11, 2018 (referred to after this as “the MCAI”), to address the unsafe condition on these products. The MCAI states:

Fractures of LPC fan blade retention lugs were reported on engines that had been subjected to a high number of Dry Film Lubrication (DFL) treatments. Subsequent investigation determined that this had exposed the retention lugs of the affected LPC (fan) blades to excessively high stress cycles.

This condition, if not detected and corrected, could lead to failure of LPC fan blade retention lug(s), high vibration, reduced thrust or in-flight shut down, possibly resulting in reduced control of the aeroplane.

To address this potential unsafe condition, RRD issued original issue of Alert NMSB TAY-72-A1833 to provide identification and replacement instructions and EASA issued AD 2017-0217 to

require determination of the number of DFL treatments applied to the LPC fan blades and, based on that determination, fan blade(s) replacement. That AD also introduced the maximum allowable number of DFL treatments applicable to the LPC fan blades. Since that AD was issued, RRD issued the NMSB to update the calculation methodology which was provided to determine the number of DFL treatments, in case that number could not be identified from the engine maintenance records. The new calculation methodology, compared with the methodology provided in the original issue of the RRD Alert NMSB TAY-72-A1833 can lead, in some cases of LPC fan blades with TAY 651-54 operation history, to earlier replacement of blades. For the reasons described above, this AD retains the requirements of EASA AD 2017-0217, which is superseded, but refers to an updated alternative method to determine the number of DFL treatments.

You may obtain further information by examining the MCAI in the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0993.

#### **Related Service Information under 1 CFR Part 51**

We reviewed RRD Alert Non-Modification Service Bulletin (NMSB) TAY-72-A1833, Revision 1, dated January 8, 2018. The Alert NMSB describes procedures for determining the number of DFL treatments on each LPC fan blade by reviewing the engine maintenance records or using an alternative method of counting, and replacing the LPC fan blade with a part eligible for installation if the DFL treatment limit is exceeded. This service information is reasonably available because the interested parties have

access to it through their normal course of business or by the means identified in the ADDRESSES section.

#### **FAA's Determination**

This product has been approved by EASA and is approved for operation in the United States. Pursuant to our bilateral agreement with the European Community, EASA has notified us of the unsafe condition described in the MCAI and service information referenced above. We are proposing this AD because we evaluated all the relevant information provided by EASA and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

#### **Proposed AD Requirements**

This proposed AD would require reviewing engine maintenance records or using an alternative method of counting and replacing the LPC fan blade with a part eligible for installation if the DFL treatment limit is exceeded.

#### **Costs of Compliance**

We estimate that this proposed AD affects 76 engines installed on airplanes of U.S. registry.

We estimate the following costs to comply with this proposed AD:

##### **Estimated costs**

<b>Action</b>	<b>Labor cost</b>	<b>Parts cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Inspect LPC fan blades	11 work-hours X \$85 per hour = \$935	\$0	\$935	\$71,060

We estimate the following costs to do any necessary replacement of a single LPC fan blade that would be required based on the results of the proposed inspection. We have no way of determining the number of aircraft that might need replacement of the LPC fan blades.

### On-condition costs

Action	Labor cost	Parts cost	Cost per product
Replace LPC fan blade	16 work-hours X \$85 per hour = \$1,360	\$10,750	\$12,110

#### Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to engines, propellers, and associated appliances to the Manager, Engine and Propeller Standards Branch, Policy and Innovation Division.

## **Regulatory Findings**

We determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

## **The Proposed Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

### **PART 39 - AIRWORTHINESS DIRECTIVES**

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

- 2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

**Rolls-Royce Deutschland Ltd & Co KG:** Docket No. FAA-2018-0993; Product Identifier 2018-NE-18-AD.

**(a) Comments Due Date**

We must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to Rolls-Royce Deutschland Ltd & Co KG (RRD) TAY 650-15 and TAY 651-54 turbofan engines with low-pressure compressor (LPC) fan blade module M01300AA or M01300AB, installed.

**(d) Subject**

Joint Aircraft System Component (JASC) Code 7230, Turbine Engine Compressor Section.

**(e) Unsafe Condition**

This AD was prompted by reports of LPC fan blade retention lug fractures on engines with a high number of dry-film lubrication (DFL) treatments. We are issuing this AD to prevent failure of the LPC fan blade retention lug. The unsafe condition, if not addressed, could result in loss of engine thrust control and reduced control of the airplane.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Required Actions**

(1) Within 30 days after the effective date of this AD, determine whether the engine is a Group 1 or Group 2 engine as follows:

(i) A Group 1 engine is an affected RRD TAY 650-15 or TAY 651-54 turbofan engine with a LPC fan blade, part number (P/N) JR31911, P/N JR33865, or P/N JR33866, and with a serial number (S/N) listed in Appendix 1 of RRD Alert Non-



Modification Service Bulletin (NMSB) TAY-72-A1833, Revision 1, dated January 8, 2018.

(ii) A Group 2 engine is any other RRD TAY 650-15 or TAY 651-54 turbofan engine with LPC fan blade module M01300AA or M01300AB, installed.

(2) For Group 1 and 2 engines: Within 30 days after the effective date of this AD, determine the number of DFL treatments on each affected LPC fan blade by reviewing the maintenance records or using the alternative method specified in the Accomplishment Instructions, paragraph 3.D. or 3.Q., of RRD Alert NMSB TAY-72-A1833, Revision 1, dated January 8, 2018.

(3) Depending on the results of the maintenance record review or the alternative method specified above, do the following, as applicable:

(i) For Group 1 and 2 engines: If the number of LPC fan blades with DFL treatments is fewer than 13, mark the LPC fan blade dovetail root with a suffix code during the next scheduled LPC fan blade removal using the Accomplishment Instructions, paragraph 3.J. or 3.U., of RRD Alert NMSB TAY-72-A1833, Revision 1, dated January 8, 2018.

(ii) For Group 1 engines: If LPC fan blades with 13 to 20 DFL treatments are installed on more than one engine on the same airplane, within 500 flight hours after the effective date of this AD, use one of the three options in the Accomplishment Instructions, paragraph 3.F., of RRD Alert NMSB TAY-72-A1833, Revision 1, dated January 8, 2018, to ensure that no LPC fan blade with 13 to 20 DFL treatments is installed on more than one engine on the same airplane.

(iii) For Group 1 and 2 engines: If it is determined that the number of DFL treatments is equal to or more than the value defined in Table 1 of paragraph (g) of this AD, remove the LPC fan blade from service and replace with a part eligible for installation within the compliance times specified in Table 1 of paragraph (g) of this AD.

**Table 1 – LPC Fan Blade Replacement**

<b>Group</b>	<b>DFL Treatments</b>	<b>Compliance Time</b>
1	20 or more	Within 500 flight hours after the effective date of this AD
2	13 or more	Within 500 flight hours after the effective date of this AD

**(h) Installation Prohibition**

After the effective date of this AD, do not install an affected LPC fan blade or LPC module M01300AA or M01300AB, onto any engine or install any engine with an affected LPC fan blade or LPC module M01300AA or M01300AB, onto any airplane unless it has been first determined that the LPC fan blades have had less than 13 DFL treatments, and have been marked in accordance with the Accomplishment Instructions, paragraph 3.J. or 3.U, of RRD Alert NMSB TAY-72-A1833, Revision 1, dated January 8, 2018.

**(i) Definitions**

(1) A part eligible for installation is a LPC fan blade that has had 12 or fewer DFL treatments and is marked on the LPC fan blade dovetail root with a suffix code depicting the number of DFL treatments.

(2) An affected fan blade is an LPC fan blade, P/N JR31911, P/N JR33865, or P/N JR33866, and with an S/N listed in Appendix 1 of RRD Alert NMSB TAY-72-A1833, Revision 1, dated January 8, 2018.

**(j) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ECO

Branch, send it to the attention of the person identified in paragraph (k)(1) of this AD. You may email your request to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

**(k) Related Information**

(1) For more information about this AD, contact Wego Wang, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA, 01803; phone: 781-238-7134; fax: 781-238-7199; email: wego.wang@faa.gov.

(2) Refer to European Union Aviation Safety Agency (EASA), AD 2018-0079, dated April 11, 2018, for more information. You may examine the EASA AD in the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating it in Docket No. FAA-2018-0993.

(3) For service information identified in this AD, contact Rolls-Royce Deutschland Ltd & Co KG, Eschenweg 11, Dahlewitz, 15827 Blankenfelde-Mahlow, Germany; phone: +49 (0) 33-7086-1883; fax: +49 (0) 33-7086-3276. You may view this referenced service information at the FAA, Engine & Propeller Standards Branch, 1200 District Avenue, Burlington, MA, 01803. For information on the availability of this material at the FAA, call 781-238-7759.

Issued in Burlington, Massachusetts, on February 21, 2019.

Robert J. Ganley,  
Manager, Engine and Propeller Standards Branch,  
Aircraft Certification Service.  
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